

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION

*In re* Flint Water Cases

Judith E. Levy  
United States District Judge

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This Order Relates To:

*Bellwether I Cases*  
Case No. 17-10164

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**OPINION AND ORDER GRANTING IN PART AND DENYING IN  
PART DEFENDANTS VEOLIA NORTH AMERICA, LLC, VEOLIA  
NORTH AMERICA, INC., AND VEOLIA WATER NORTH  
AMERICA OPERATING SERVICES, LLC'S MOTION TO  
EXCLUDE THE TESTIMONY AND REPORT OF DR. ROBERT  
MICHAELS [342]**

This opinion is the fifth in a series addressing the admissibility of the testimony and reports of eight experts retained by Plaintiffs in anticipation of the first bellwether trial, currently set to begin on February 15, 2022. Defendants argue that none of these experts can meet the standards set by Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

Currently before the Court is the motion by Veolia North America, LLC, Veolia North America, Inc., and Veolia Water North America Operating Services, LLC (collectively “VNA”) to exclude the testimony and report of Dr. Robert Michaels (ECF No. 342.) The LAN and LAD Defendants join VNA’s motion. (ECF No. 344.) For the reasons set forth below, VNA’s motion to exclude is GRANTED IN PART and DENIED IN PART.

## **I. Background**

Dr. Robert Michaels holds a Ph.D. in Toxicology and a M.S. in Environmental Ecology. (ECF No. 370-2, PageID.23859.) He is the president of RAM TRAC Corporation, a company that provides health risk assessment and management services. *Id.* He has published widely in the field of toxicology. (*Id.* at PageID.23860-23865.) His qualifications as an expert are not in dispute.

Plaintiffs seek to offer Dr. Michaels as one of their causation experts. They retained Dr. Michaels to determine (1) whether lead poisoning could cause the adverse health effects they have experienced (general causation), and (2) whether they were exposed to lead (the exposure element of specific causation).

The general causation portion of Dr. Michaels' report begins by reviewing the pathways through which lead is absorbed and processed by the human body. (ECF No. 330-15, PageID.14894-14891.) Dr. Michaels then summarizes the known health effects of lead poisoning. These include a number of illnesses from which no bellwether Plaintiff currently suffers: renal disease, cancer, and ophthalmic, gastrointestinal, endocrine and immunological effects. (*Id.* at 14890-14916.) But Dr. Michaels also explains that lead can cause neurobehavioral and neurocognitive effects, and that no toxicity threshold for those effects has been discovered. (*Id.* at PageID.14909-14910; PageID.14915) (citing Anthony J. McMichael et. al., *The Port Pirie Cohort Study: environmental exposure to lead and children's abilities at the age of four years*, 319 New England J. of Med. 8, 468-75 (1988); Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Lead*, (Aug. 2020) (<https://www.atsdr.cdc.gov/ToxProfiles/tp13.pd>) ("Toxicological Profile"); Mary Fulton, *Influence of blood lead on the ability and attainment of children in Edinburgh*, 8544 The Lancet 1, 211-216 (1987)). Dr. Michaels hypothesizes that even one molecule of lead could cause neurocognitive harm. (*Id.* at PageID.14927.)

Dr. Michaels next evaluates each bellwether Plaintiffs' potential exposure to lead through Flint's drinking water. To do so, Dr. Michaels relied on secondary literature on the Flint Water Crisis, tests of the water in Plaintiffs' schools, all of the lead exposure assessments taken of the Plaintiffs (both bone and blood tests), and available public records about Plaintiffs' housing. He also reviewed the depositions of each of Plaintiffs' parents to determine when and where Plaintiffs would have consumed Flint water

Dr. Michaels concludes that E.S. stopped drinking unfiltered water at home in the summer of 2014, after his family received a warning to stop drinking the water. (ECF No. 330-15, PageID.14871.) He indicates that the internal plumbing of E.S.' house contained lead solder, which could contribute to lead in E.S.' residential water. *Id.* It is ambiguous in the record when E.S. attended preschool, and Dr. Michaels relied on school records to determine that E.S. attended preschool in 2014-2015. (*Id.* at PageID.14873.) The water at E.S.' preschool was tested in 2016, revealing lead levels of up to 25 times the regulatory limit. *Id.* Dr. Michaels concludes that E.S. was exposed to lead in water at home and

at school, through drinking, cooking, bathing, and showering, during at least part of 2014 and 2015. (*Id.* at PageID.14940.)

Dr. Michaels indicates that A.T. was likewise exposed to lead in the water both at home and at school. She drank unfiltered tap water at home into 2015. (*Id.* at PageID.14877-14879). Water in A.T.'s school was tested in October of 2015, and revealed lead levels of up to 21 times the regulatory limit. (*Id.* at PageID.14879.)

Dr. Michaels relies on the deposition of R.V.'s parents to conclude that R.V. drank unfiltered tap water at home until approximately 3-4 months after September of 2014. (*Id.* at PageID.14882.) During this time, R.V.'s parents also used unfiltered water for cooking and other household purposes. *Id.* Accordingly, Dr. Michaels concludes that R.V. was exposed to lead in the water at her home. R.V. did not attend school in Flint, and therefore was not exposed to lead at school.

Finally, Dr. Michaels notes that D.W. stopped drinking untreated water at her home in the early summer of 2014 at the advice of her pediatrician. (*Id.* at PageID.14887.) D.W.'s parents stopped using the water for cooking soon after, but continued to use it for bathing. *Id.* Water

at D.W.'s elementary school was tested in November of 2015 and revealed lead levels of up to 23 times the regulatory limit. (*Id.* at PageID.14887.)

Dr. Michaels also lists each of the Plaintiffs' blood and bone lead tests. Regarding the blood lead testing, Dr. Michaels notes that where state of the art methods were used, tests came back positive for lead but with lead levels below 3.3 µg/dl. (*Id.* at PageID.14834-14836.) Conversely, where the cheaper and simpler finger-prick method was used, tests came back negative. That is unsurprising, because the sensitivity of these tests is >3.3 µg/dl. *Id.* Hence, Dr. Michaels concludes that, had state of the art methods been used for all bellwether Plaintiffs, all of them would likely have been tested positive but with values below 3.3 µg/dl. *Id.* Dr. Michaels also notes that the bone lead tests are indicative of persistent exposure to lead. (*Id.* at PageID.14940-14943.)

Dr. Michaels ultimately concludes that it is more likely than not that each of the four bellwether Plaintiffs was exposed to lead through exposure to Flint drinking water at both their home and school.

## II. Legal Standard

The admissibility of expert testimony is governed by Federal Rule of Evidence 702, which sets forth three requirements: (1) the witness must be qualified, (2) the testimony must be relevant, and (3) the testimony must be reliable. Fed. R. Evid. 702; *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 528–29 (6th Cir. 2008). As the Supreme Court explained in *Daubert*, Rule 702 imposes a “gatekeeping” obligation on the courts to ensure that scientific testimony “is not only relevant, but reliable.” *Daubert*, 509 U.S. at 589; *See also Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 147 (1999).

*Daubert* provides a non-exclusive list of factors courts may consider when evaluating reliability: (1) whether the theory or technique at the basis of the opinion is testable or has been tested, (2) whether it has been published and subjected to peer review, (3) what the known error rates are, and (4) whether the theory or technique is generally accepted. *Daubert*, 509 U.S. at 593; *see also In re Scrap Metal*, 527 F.3d at 529 (listing same factors). Not every factor needs to be present in every instance, and courts may adapt them as appropriate for the facts of an individual case. *Kumho* 526 U.S. at 150.

“Rejection of expert testimony is the exception, rather than the rule.” *United States v. LaVictor*, 848 F.3d 428, 442 (6th Cir. 2017) (quoting *In re Scrap Metal*, 527 F.3d at 529–30)). Nevertheless, the burden is on Plaintiffs to show by a “preponderance of proof” that the proffered expert meets the standards of Rule 702 as interpreted by *Daubert*. *Pride v. BIC Corp.*, 218 F.3d 566, 578 (6th Cir. 2000) (quoting *Daubert*, 509 U.S. at 592).

### **III. Analysis**

According to VNA, all of Dr. Michaels’ testimony should be excluded. VNA argues that (1) Dr. Michaels’ exposure assessment is unreliable, (2) his discussion of Plaintiffs’ bone and blood lead is speculative, (3) he should be prohibited from testifying that even one molecule of lead is toxic, (4) his general causation testimony is inadmissible because it relies on mere associations, and (5) all testimony about health conditions that have not affected any of the bellwether Plaintiffs is more prejudicial than probative.

This Court has already ruled on some of these arguments in its previous *Daubert* opinions. For the reasons stated in *In re Flint Water Cases*, No. 17-10164, 2021 WL 5356295 (E.D. Mich., Nov. 17, 2021)



(“Specht”), the bone lead tests conducted in this case are not so unreliable as to warrant their exclusion under Rule 702 or *Daubert*. Dr. Michaels may therefore rely on them in his testimony. Such reliance is subject to one exception. Dr. Michaels relies on reference values which were initially included in Dr. Specht’s reports. However, Dr. Specht removed those values in the final draft of his reports “because they are not really reflective of anything in this regard since we’re looking at children.” (ECF No. 430, PageID.32539.) Because Dr. Specht has retracted his reference values, Dr. Michaels should not rely on them in his testimony.

For the reasons stated in *In re Flint Water Cases*, No. 17-10164, 2021 WL 5631706 at \*7 (E.D. Mich. 1, 2021) (“Graziano”), Dr. Michaels’ opinions about health conditions from which the Plaintiffs do not currently suffer are more prejudicial than probative and therefore inadmissible. *Id.* (citing *United States v. Asher*, 910 F.3d 854, 860 (6th Cir. 2018)).<sup>1</sup> Conversely, because Dr. Michaels relies on the *Toxicological Profile* as well as several other studies which account for confounding variables, his general causation testimony regarding the neurocognitive

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<sup>1</sup> As in the Court’s previous rulings, Plaintiffs may request reconsideration of this decision if they obtain evidence that they are likely to suffer from, or already suffer from, any of the conditions discussed by Dr. Michaels.

and neurobehavioral harms of lead poisoning is admissible and does not improperly rely on mere associations. *See Graziano*, 2021 WL 5631706 at \*7-8 (discussing *Nelson v Tenn. Gas. Pipeline Co.*, 243 F.3d 244 (6th Cir. 2011); *In re Flint Water Cases*, 2021 WL 5847102 at \*5-6 (E.D. Mich., Dec. 9, 2021) (“Bithoney”).

Finally, Dr. Michaels’ hypothesis that a single molecule of lead could cause neurocognitive harms is not sufficiently reliable to meet the standards of Rule 702 and *Daubert* because it is not supported by any peer reviewed publication. Moreover, it is more prejudicial than probative for the reasons stated in *Graziano*, 2021 WL 563706, at \*6-7. As in *Graziano*, Dr. Michaels will be required to clarify that while studies show that very small amounts of lead cause neurocognitive harms, they have not yet proven that even a single molecule of lead could do so. *Id.* (citing *United States v. Gissantaner*, 990 F.3d 457, 470 (6th Cir. 2001)).

This leaves VNA’s objections to Dr. Michaels’ exposure assessment and his discussion of Plaintiffs’ blood tests. For the reasons set forth below, Dr. Michaels’ opinion that R.V., A.T., and D.W. were exposed to lead through the tap water in their homes is not sufficiently reliable to

meet the standards set by Rule 702 and *Daubert*. The remainder of Dr. Michaels' testimony is admissible.

### **A. Exposure Assessment**

VNA challenges all of Dr. Michaels' conclusions regarding the Plaintiffs' exposure to lead through Flint's drinking water. According to VNA, Dr. Michaels (1) should have conducted a quantitative exposure assessment, (2) should have considered whether the Plaintiffs could have been exposed to lead from sources other than Flint's water, (3) ignored the dates each Plaintiff stopped drinking unfiltered water, and (4) should have more thoroughly investigated the composition of the Plaintiffs' service lines.<sup>2</sup>

Regarding the Plaintiffs' exposure to lead at school, Dr. Michaels' opinions clearly meet the standards of Rule 702 and *Daubert*. As has been set forth above, the drinking water at A.T., E.S., and D.W.'s schools was

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<sup>2</sup> VNA also argues that Dr. Michaels should have considered evidence in the secondary literature suggesting that lead levels in Flint's water decreased in 2015, after a spike in 2014. But Dr. Michaels draws no conclusion about the quantity of lead to which Plaintiffs were exposed. Nor does he opine anywhere that the lead levels in the water were the same in 2015 as they were in 2014. Accordingly, he was not required to consider studies discussing the change in lead levels in 2015. While the Court appreciates that this evidence is important to the resolution of Plaintiffs' claims, that does not make it important to the reliability of Dr. Michaels' limited testimony.

tested for lead, and these test results all included measurements far above the regulatory limits. VNA objects that Dr. Michaels has not investigated whether Plaintiffs drank water at the specific water fountains where lead was detected. But expert witnesses may draw reasonable inferences from the available evidence. *Jahn v. Equine Serv.'s, PSC.*, 233 F.3d 382, 388 (6th Cir. 2000) (citing *Daubert*, 509 U.S. at 592-93.) Dr. Michaels need not have investigated Plaintiffs' every move at school to infer, reasonably, that schoolchildren drink water from various water fountains at school during the day, and that they were therefore likely exposed to at least some additional lead at school. Accordingly, his conclusions about the Plaintiffs' exposure to lead at school are reasonable.<sup>3</sup>

The evidence is less clear where Plaintiffs' exposure to lead through residential drinking water is concerned. As this Court has noted before, there is no quantitative evidence of the lead levels in any of the Plaintiffs' homes during the relevant period. *Bithoney*, 2021 WL 5847012 at \*8.

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<sup>3</sup> As is noted above, there is some ambiguity in the record about whether E.S. attended preschool in 2014-2015, or whether he did not attend school at all that year. This motion is not the place to resolve that ambiguity, but it should be clear that Dr. Michaels may not testify about the fact of E.S.' attendance, only that if E.S. attended, he would have been exposed to additional lead at school.

VNA argues that Dr. Michaels should have conducted a quantitative analysis of Plaintiffs' lead exposures, but it would be impossible for Dr. Michaels to determine the lead content of Plaintiffs' drinking water retrospectively. *Daubert* "does not require perfect methodology," and it certainly does not require that experts do what is scientifically impossible. *Best v. Lowe's Home Ctr.'s Inc.*, 563 F.3d 171, 181 (quoting *Kumho Tire*, 526 U.S. at 152.) At issue is therefore whether despite the absence of clear quantitative evidence, Dr. Michaels' exposure assessment is based on "good grounds." *Daubert*, 509 U.S. at 590.

VNA argues that it is not. First, it claims that Dr. Michaels should have analyzed other possible sources of lead in Plaintiffs' environment. This argument misunderstands the limited scope of Dr. Michaels' testimony. It is true that Plaintiffs must rule out other plausible sources of exposure to lead to prevail at trial. *See Pluck v. BP Oil Pipeline Co.*, 640 F.3d 671, 678 (6th Cir. 2011) (requiring expert to "reliably rule out the rejected causes" of an injury) (quoting *Tamraz v. Lincoln Elec. Co.*, 620 F.3d. 665, 674 (6th Cir. 2010)). Dr. Michaels' testimony does not do so. But Dr. Michaels need not testify to this particular part of Plaintiffs' case to satisfy the standards of Rule 702 and *Daubert*. Dr. Michaels

nowhere opines that all (or most) of the lead burden detected in Plaintiffs' bones was caused by exposure to Flint's drinking water.<sup>4</sup> He concludes only that Flint's drinking water "more probably than not caused incremental exposure" to lead. (ECF No. 330-15, PageID.14947-14949.) That limited conclusion is not inconsistent with other exposures. Accordingly, Dr. Michaels was not required to rule out such other exposures.

VNA next argues that Dr. Michaels ignored the dates on which each Plaintiff stopped drinking unfiltered water at home, but this argument is meritless. Dr. Michaels in fact carefully lists these dates in his report. VNA claims that Dr. Michaels fails to take those dates into account in his actual exposure assessment, but this again misreads Dr. Michaels' testimony. In the "Findings" section of his report, Dr. Michaels notes a duration of "potential exposure" to lead in residential water for each Plaintiff. (e.g., ECF No. 330-15, PageID.14871.) The duration of Plaintiffs' "potential exposure" to lead is the length of time Plaintiffs *could* have been exposed to lead, had they been drinking unfiltered water.

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<sup>4</sup> Plaintiffs' primary specific causation expert, Dr. Bithoney, did offer this opinion, and he accordingly was required to reliably rule out potential alternative sources of lead. *See Bithoney*, 2021 WL 5847102 at \*11-12.

*Id.* Dr. Michaels does not claim that any Plaintiff drank water for the entire “potential exposure” duration. Accordingly, he did not ignore the dates on which Plaintiffs’ stopped drinking unfiltered tap water at home.

VNA’s other arguments present more serious questions, however. VNA argues that Dr. Michaels should have considered evidence that none of the water lines leading up to Plaintiffs’ homes contained lead. Dr. Michaels’ report leaves the question of the makeup of Plaintiffs’ water lines open. He considers some evidence that they were copper (ECF No. 330-15, PageID.14832, PageID.14971.), alongside contrary evidence suggesting that the pipes might have contained lead. (*e.g. id.* at PageID.14940-14941) (reviewing A.T.’s mother’s testimony regarding a water line replacement, noting that the replacement “was done, presumably, because of its composition containing Pb.”) As VNA points out, Dr. Michaels did not review any of the FAST Start Program data, which shows that when the bellwether Plaintiffs’ lines were excavated in 2018 and 2019, they were determined not to contain lead. (ECF No. 330-6, PageID.14382.) Of course, as Dr. Michaels noted in his deposition, this data is not dispositive, because it is possible that Plaintiffs’ water lines might have been replaced prior to 2018. (ECF No. 440, PageID.34905-

34907.) But Dr. Michaels did not investigate whether such replacements occurred, speak to any of the bellwether Plaintiffs' parents, or look at City records for other information about the makeup of the Plaintiffs' service lines. *Id.*

Dr. Michaels' failure to conduct a more thorough investigation on this issue is problematic. As he himself notes, "the preponderance of potential [lead] exposure via drinking water appears to originate from Pb in service lines." (ECF No. 330-15, PageID.14832.) Accordingly, the makeup of Plaintiffs' service lines is highly relevant to the question whether Plaintiffs were exposed to lead in the residential tap water at their homes. In the absence of a reliable determination that Plaintiffs' service lines contained lead, Dr. Michaels' conclusion that the bellwether Plaintiffs were "evidently...exposed to Pb in water at home" (*Id.* at PageID.14940) lacks support.

Plaintiffs ultimately have the burden to show by a preponderance of the evidence that Dr. Michaels' conclusions are based on a reliable methodology. *Pride*, 218 F.3d at 578 (quoting *Daubert*, 509 U.S. at 592). They cannot carry that burden with respect to Dr. Michaels' conclusion that they were exposed to lead in their residential water because Dr.



Michaels does not offer any affirmative evidence for that conclusion. He cannot reliably conclude that Plaintiffs' service lines contained lead; nor does he point to quantitative lead measurements of Plaintiffs' water or conduct a differential diagnosis showing that exposure through residential tap water was the most likely cause of Plaintiffs' exposures to lead. None of these failures would be fatal individually—but experts must base their conclusions on *some* affirmative evidence. *See, e.g., McLean v. 988011 Ontario, Ltd.*, 224 F.3d 797, 801 (6th Cir. 2000) (“the expert’s conclusions...must have a basis in established fact”) (citing *Skinner v. Square D. Co.*, 445 Mich. 153, 172-173 (1994)).

Dr. Michaels cites to several city-wide studies showing that the City of Flint had a systemic problem with the lead pollution of its drinking water. These studies strongly suggest that Plaintiffs were exposed to lead through Flint's water, *Bithoney*, 2021 WL 5847102 at \*9, but they do not show that this exposure occurred *in Plaintiffs' homes*. To draw that additional conclusion, Dr. Michaels' would need to rely on some additional, reliable evidence. Because he does not do so, his opinion that Plaintiffs were exposed to lead in their homes is not based on “good grounds,” *Daubert*, 509 U.S. at 590, and must be excluded.

Dr. Michaels may explain at trial that *if* the service lines or the water mains leading to Plaintiffs' homes contained lead, then Plaintiffs would have been exposed to lead in their residential drinking water. Additionally, he may explain that the internal plumbing in E.S.' home contained lead solder, and that he would therefore have been exposed to some additional lead at his home regardless of the makeup of his service lines.<sup>5</sup>

### **B. Testimony About Blood Testing**

VNA also objects to Dr. Michaels' discussion of the Plaintiffs' blood test results. Dr. Michaels analyzes blood tests taken of sixteen plaintiffs, including the four bellwether Plaintiffs. (ECF No. 330-15, PageID.14834-14836.) He indicates that every time a state of the art testing method was employed, tests came back positive for lead, but at lead levels below 3.3 µg/dl. *Id.* Conversely, where the cheaper and simpler finger-prick test

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<sup>5</sup> VNA argues that this opinion is also unreliable, but that is incorrect. First, an inspection of the internal plumbing of E.S.' home revealed unsafe conditions, consistent with Dr. Michaels' conclusion. (ECF No. 330-15, PageID.14940.) Second, Dr. Michaels cites to a peer-reviewed article supporting his opinion that lead in internal plumbing can also cause the leaching of lead into drinking water. Jacqueline Gibson et al., *Children drinking private well water have higher blood lead than those with city water*, 117 PNAS 29, 16898-16907 (2020).

was used, tests came back negative. The finger-prick test has a sensitivity of  $>3.3 \mu\text{g/dl}$ . Hence, Dr. Michaels concludes that:

Use of methods less sensitive than the state of the art raises the possibility that some or all of the tabulated *non-detects* actually would have been reported as *detects* if state-of-the-art methods instead had been applied. Conversely, all seven of the tabulated *detects* probably would have been reported as *non-detects*, had the relatively insensitive tests been applied. (*Id.* at PageID.14836.)

VNA claims that this conclusion is pure speculation, (ECF No. 330-6, PageID.14391-14392), but that argument is meritless. Dr. Michaels' suggestion that the bellwether Plaintiffs might have had blood lead test results higher than zero but lower than the detection limit of the finger-prick test is a modest and reasonable inference from the evidence.<sup>6</sup> It is therefore admissible.

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<sup>6</sup> Defendants point to *Cameron v. Peach Cty*, 2004 WL 5520003 at \*11 (M.D. Ga. June 28, 2004), but that case is completely unlike this one. In *Cameron*, a toxicologist opined that plaintiffs' toxic exposure created a substantial risk of illness was unreliable because there was no data of any kind to support the expert's conclusion.

#### **IV. Conclusion**

For the reasons set forth above, VNA's motion to exclude Dr. Michaels' opinions and testimony is GRANTED IN PART and DENIED IN PART.

IT IS SO ORDERED.

Dated: December 15, 2021  
Ann Arbor, Michigan

s/Judith E. Levy  
JUDITH E. LEVY  
United States District Judge

#### **CERTIFICATE OF SERVICE**

The undersigned certifies that the foregoing document was served upon counsel of record and any unrepresented parties via the Court's ECF System to their respective email or First Class U.S. mail addresses disclosed on the Notice of Electronic Filing on December 15, 2021.

s/William Barkholz  
WILLIAM BARKHOLZ  
Case Manager